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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,574	03/29/2004	Cory Wajda	FKL-012	2096
37694 7590 06/08/2009 WOOD, HERRON & EVANS, LLP (TOKYO ELECTRON) 2700 CAREW TOWER 441 VINE STREET CINCINNATI, OH 45202				
			EXAMINER	
			GAMBETTA, KELLY M	
			ART UNIT	PAPER NUMBER
			1792	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/811,574

Applicant(s)

WAJDA ET AL.

Examiner

KELLY GAMBETTA

Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 24 February 2009 have been fully considered but they are not persuasive. The applicant argues that Wang et al. does not teach monitoring optical emission from a ceramic substrate heater to determine its coating status and comparing it to a threshold value for when it is cleaned. However, Wang et al. teaches measuring optical emission from a susceptor to indicate its status and surface conditions, such as the amount of coating in paragraph 0005. When the emission reaches a certain value, it needs cleaned, thus Wang et al. teaches two threshold values of emission: clean and not clean. Cui et al. teaches a cleaning process using optical monitoring, in which the end point would indicate that the susceptor is clean (i.e. with no coating) in paragraphs 0015-0019 et seq. Even reaching steady state is reaching a threshold value as broadly claimed. Obviously, the method of Wang et al. of having an emission value for a clean and not clean susceptor combined with Cui et al. that teaches stopping when an end point of cleanliness is reached teaches these limitations. Therefore it would have been obvious to one of ordinary skill in the art to modify the process of Wang et al. to be a cleaning process as well as taught by Cui et al. in order to prevent contamination and take accurate emission readings. The applicant argues similarly for the Fong et al. in view of Wang et al. The arguments regarding Wang et al. are answered as above. It is noted that Fong et al. determines a threshold value of an optical emission intensity or the ceramic substrate heater (see

Column 39, lines 54 – 67, and Column 40, lines 1 and 2); and monitors a measured value of optical emission from the heated ceramic substrate heater during the process and comparing the measured value to the threshold value to determine coating status of the ceramic substrate heater (see Column 39, lines 27 – 53; and based upon the status from the monitoring, performs one of the following: (a) continuing the exposing and monitoring, and (b) stopping the process when the measured value is approximately equal to the threshold value (see Column 38, lines 1 – 67, Column 39, lines 1 – 67, and Column 40, lines 1 – 17, and especially Column 39, lines 35 – 43).

Therefore, for at least these reasons, the rejections of the previous office action are maintained and repeated here.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1 and 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (US 2002/0173127) in view of Cui et al. (US 2002/0151186).

Regarding Claims 1 and 8, Wang et al. teaches a method of determining coating status (paragraph 0005) of a ceramic substrate heater in a processing system (paragraphs 0005 and 0019), the method comprising: determining a threshold value of an optical emission intensity of the ceramic substrate heater, heating the ceramic substrate heater to a desired temperature (paragraph 0039); exposing the ceramic substrate heater to a reactant gas during a process (abstract); monitoring a measured value of optical emission from the heated ceramic substrate heater during the process and comparing the measured value to the threshold value to determine coating status of the ceramic substrate heater (paragraph 0005); and based upon the status from the monitoring, performing one of the following: (a) continuing the exposing and monitoring,

and (b) stopping the process when the measured value is approximately equal to the threshold value (see paragraphs 0005-0007 and 0049 the threshold value and optical monitoring from the susceptor determines a film of desired thickness). Wang et al. teaches a coating process with optical monitoring from the wafer susceptor, not a cleaning process. Cui et al. teaches a cleaning process using optical monitoring, in which the end point would indicate that the susceptor is clean (i.e. with no coating) in paragraphs 0015-0019 et seq. Cui et al. teaches that this cleaning is important to prevent contamination in the chamber (paragraph 0009). Additionally, Wang et al. discusses the need for cleaning in the disclosed emissive process as discussed above and in paragraph 0005.

Therefore it would have been obvious to one of ordinary skill in the art to modify the process of Wang et al. to be a cleaning process as well as taught by Cui et al. in order to prevent contamination and take accurate emission readings.

Regarding Claim 4, Wang et al. teaches the method according to Claim 1, wherein the monitoring comprises detecting infrared optical emission (paragraph 0005).

Regarding Claims 5 and 6, Wang et al. teaches the method according to Claim 1, wherein the monitoring comprises comparing the optical emission intensity to a threshold value, the threshold value being a fixed intensity value or a ratio of the optical emission intensity and an initial optical emission intensity, and wherein the performing (b) comprises stopping the process after a threshold value has been reached (see

paragraphs 0005-0007 and 0049 the threshold value and optical intensity monitoring from the susceptor determines a film of desired thickness).

Regarding Claim 7, Wang et al. teaches the method according to Claim 1, wherein the heating comprises heating a ceramic substrate heater supporting a substrate (paragraph 0002, for example).

Claims 1 and 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5812403 to Fong et al. in view of Wang et al.

Regarding Claims 1 and 8, Fong teaches a method of determining coating status (see Column 9, lines 3 – 19) of a ceramic substrate heater in a processing system (see Column 8, lines 39 – 44, and Column 9, lines 46 – 63), the method comprising: determining a threshold value of an optical emission intensity of the ceramic substrate heater (see Column 39, lines 54 – 67, and Column 40, lines 1 and 2); heating the ceramic substrate heater to a desired temperature (see Column 55, lines 13 – 28); exposing the ceramic substrate heater to a reactant gas during a process (see Column 55, lines 66 and 67, and Column 56, lines 1 – 19); monitoring a measured value of optical emission from the heated ceramic substrate heater during the process and comparing the measured value to the threshold value to determine coating status of the ceramic substrate heater (see Column 39, lines 27 – 53; and based upon the status from the monitoring, performing one of the following: (a) continuing the exposing and monitoring, and (b) stopping the process when the measured value is approximately equal to the threshold value (see Column 38, lines 1 – 67, Column 39, lines 1 – 67, and

Column 40, lines 1 – 17, and especially Column 39, lines 35 – 43). Fong et al. does not explicitly teach that the emission from the heater is optical emission radiating directly from the heater. Wang et al. teaches determining process end points by measuring radiation directly emitted by a heater in paragraph 0005. Therefore, substituting measuring reaction products in Fong et al. for measuring IR radiation as taught in Wang et al. would have been obvious because the substitution of one known element for another would have yielded predictable results to one of ordinary skill in the art at the time of the invention. See *KSR International Co. v. Teleflex Inc.* 550 U.S.--, 82 USPQ2d 1385 (2007). Fong teaches the method wherein exposing comprises exposing the ceramic substrate heater to a cleaning gas for removing a material coating from the ceramic substrate heater in a chamber cleaning process (see again Column 8, lines 39 – 44 and lines 60 – 67, and Column 9, lines 46 – 63). Fong teaches a method wherein determining the threshold value includes determining the optical emission intensity of the ceramic substrate heater having no coating formed thereon, and wherein the exposing comprises exposing the heated ceramic substrate heater having a material coating formed thereon to a cleaning gas for removing the material coating in a chamber cleaning process (see citations above).

Regarding Claim 4, Fong teaches the method according to Claim 1, wherein the monitoring comprises detecting infrared optical emission (see Column 8, lines 52 – 67, and Column 9, lines 1 – 26). Wang et al. also teaches this feature as discussed above.

Regarding Claims 5 and 6, Fong teaches the method according to Claim 1, wherein the monitoring comprises comparing the optical emission intensity to a threshold value, the threshold value being a fixed intensity value or a ratio of the optical emission intensity and an initial optical emission intensity, and wherein the performing (b) comprises stopping the process after a threshold value has been reached (see again Column 39, lines 27 – 67, and Column 40, lines 1 and 2). Wang et al. also teaches these features as discussed above.

Regarding Claim 7, Fong teaches the method according to Claim 1, wherein the heating comprises heating a ceramic substrate heater supporting a substrate (see, e.g., Column 8, lines 44 – 48). Wang et al. also teaches this feature as discussed above.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KELLY GAMBETTA whose telephone number is (571)272-2668. The examiner can normally be reached on Monday - Thursday 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kelly M Gambetta
Examiner
Art Unit 1792

kmg

/Timothy H Meeks/
Supervisory Patent Examiner, Art Unit 1792